A. BERGHOLD.

DEVICES FOR SECRET WRITING.

No. 185,621. Patented Dec. 26, 1876.

Fig. 1.

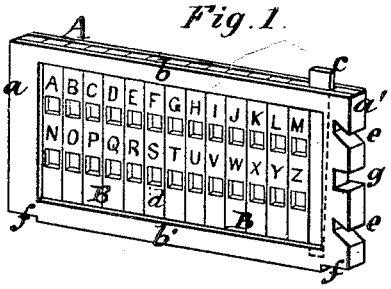


Fig 2

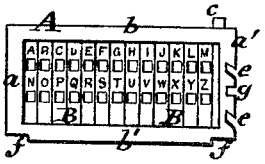
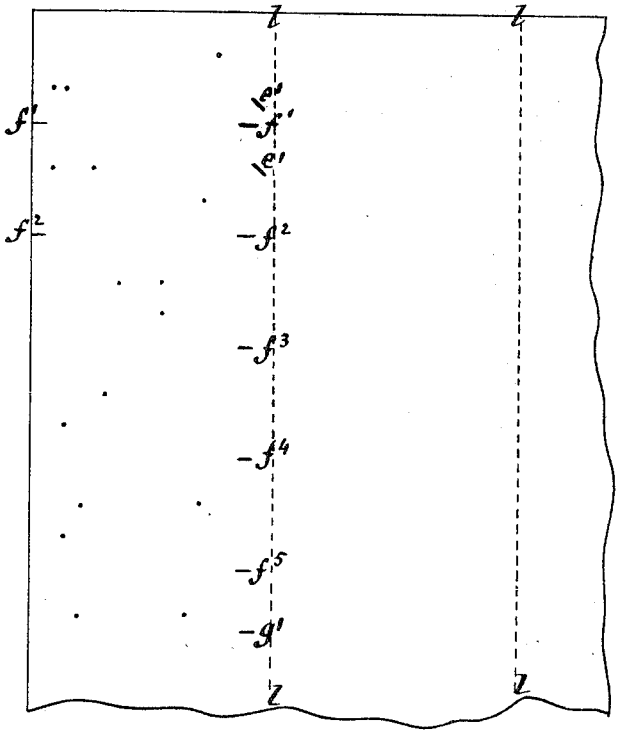


Fig. 3.

Fig. 4.



Witnesses

D. P. Cowl

W. R. Edelen

Inventor.

Alexander Berghold

by E. E. Masson

atty.

UNITED STATES PATENT OFFICE

ALEXANDER BERGHOLD, OF NEW ULM, MINNESOTA.

IMPROVEMENT IN DEVICES FOR SECRET WRITING.

Specification forming part of Letters Patent No. **185,621**, dated December 26, 1876; application filed October 10, 1876.

To all whom it may concern:

Be it known that I, ALEXANDER BERGHOLD, of New Ulm, in the county of Brown and State of Minnesota, have invented certain new and useful Improvements in Cryptography, or Secret Writing; and that the following is a full, clear, and exact description of the device used, its construction and operation, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents in perspective an enlarged view of the device. Fig. 2 represents a top view of the same. Fig. 3 represents a top view of the device in its simplest form. Fig. 4 represents a sheet of paper with a message marked upon it.

The object of my invention is to produce a device or key by means of which short but important messages can be written by a correspondent to another who has a device or key similarly constructed and arranged, by means of which the message can be promptly read and understood, or copied, but that cannot be possibly understood by any other person not provided with the key; and my invention consists in an alphabet, the different letters of which are printed, engraved, or marked upon strips of metal, paper, &c., that are interchangeable, and can be transposed, one for the other, the strips having a perforation for each letter, through which a dot, puncture, or mark can be placed upon paper or other suitable material to indicate a special letter or symbol, according to the position that it occupies in the message.

In the drawings, A represents a rectangular frame, made preferably of two sheets of thin metal, united at their edges *a* and *a'*, and also at the bottom *b'*, with a thin strip of metal interposed, so as to form a groove for the reception of a series of metallic strips, B, upon which the letters of the alphabet are marked or engraved. These strips B are placed side by side within the frame A through a slot left in the upper rail *b* of the frame A, and they are kept in position by a wedge, *c*, pressing them together.

Under (or above) each letter marked upon the strips B the metal is perforated at *d* to allow the point of a pencil, pen, or other instrument to pass through, and with which a dot or mark can be made upon paper or other suitable substance.

In the drawings, the letters of the alphabet are arranged in pairs upon the strips B, but it is evident that they may be arranged separately and in a line, either vertically or horizontally, or more than two letters may be placed upon each strip.

I prefer the form given in the drawings, as it is quite compact, and yet will allow millions of new combinations to be made with the thirteen strips of double letters by interchanging their relative positions, or even by only shifting the position of the wedge *c* if it is made of the width of a strip.

The edge *a'* of the frame has four grooves, two of which, marked *e*, form an acute angle with the edge *a'*, and, following the direction of said groove, a short line can be marked upon the paper to indicate that the letters or dots in the corresponding line should be read backward.

The groove *f* is to permit a short line to be marked upon the paper to indicate the position of the bottom of the key, and the position that the top of the key should occupy at the next move. The groove *g* is used to save space upon the paper. When the letters required are in the top line only, and the next one is also in the top line, it is only necessary to drop the key for half the distance.

For two persons to correspond with this device, it is necessary that each should have one similar in size and combination of letters. This combination can be arranged or agreed upon when the two are together, or by using blind sentences that can be understood only by the parties in correspondence. For example: "Horses cannot be bought in this city," may mean change H for C, or "Horses can be bought for half price," may mean change H for D, as H is the eighth letter and D the fourth or half. In this manner any desired number of new combinations may be made and agreed to by correspondents. The device may be used by merchants, military officers, and others.

In Fig. 4 is represented the message "Monday, five o'clock," using a key with the alphabet arranged in regular order. To read it, the key is first placed on the left-hand upper

corner of the sheet, when the dots for m o n will appear, o n to be read backward, as indicated by the line e' appearing in the lower groove *e*. Then shift the key lower down until its upper edge is even with the line f^1, when dots corresponding with d a y will appear, the letters d a to be read backward, as indicated by the line e'. Then shift the key lower down, with its upper edge even with the line f^2, and dots corresponding with f i v will appear. Then shift the key down to f^3, and the dots e o will appear. Then shift the key down to f^4. and dots corresponding with c l o will appear, Then shift the key down to f^5, and dots corresponding with c k will appear; and the line g' indicates that no dots are to appear in the lower row of letters.

If long messages are to be sent, the paper should be ruled with vertical lines *l l*, and if a ruler is used at the edge of the paper and upon the lines *l l*, a message can very promptly be written or read by sliding the key against the ruler, and a little practice will also add to the speed with which this device or key can be used. A double letter, like ee, ss, tt, can be indicated by a vertical stroke in place of a simple dot, and a horizontal stroke may be used after some words to separate them from the next.

In Fig. 3 I have shown an equivalent device, which can be made for a very small price and answer the same purpose. In this case a series of card-board cards are perforated with holes, each card having the same number of holes, and located in the same manner, preferably as shown in Fig. 3.

The letters of the alphabet are written upon two cards in the same order, one for each correspondent, and a number of blank, but perforated, cards are carried by each correspondent to replace the first one at certain dates, according to prearranged agreement or correspondence. These cards, being sold for a small price, can also be used as toys to exercise the mind of scholars and others.

If the device shown in Fig. 3 is made of metal, wood, &c., the position of the letters can be transposed by pasting other letters, printed or written on paper, upon those that are engraved; and by dampening the key with water, or upon the tongue of the owner, the meaning of the key will be obliterated by removing the pasted letters.

Having now fully described my invention, what I claim is—

1. The device or key for secret writing, consisting of a holding-frame and interchangeable strips of metal or card-board, upon which are impressed or placed the letters of the alphabet or equivalent symbols, each letter or symbol being arranged upon a strip adjacent to a perforation therein, substantially as and for the purpose described.

2. The device or key for secret writing, consisting of a sheet of metal or card-board, upon which are impressed or placed the letters of the alphabet or equivalent symbols, each letter or symbol being arranged adjacent to a perforation therein, substantially as and for the purpose described.

ALEXANDER BERGHOLD.

Witnesses:

GEORGE HOFFMAN,

CASPAR FERSCH.